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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/759,115 | 01/20/2004 | Takashi Imamura | Q79433 | 6670 |

23373 7590 03/06/2007
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| EXAMINER |
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TSAI, TSUNG YIN

| ART UNIT | PAPER NUMBER |
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2609

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/06/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/759,115

Applicant(s)

IMAMURA ET AL.

Examiner

Tsung-Yin Tsai

Art Unit

2609

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/20/2004 and 4/27/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

(1) Page 2 of Specification lines 9-14.

(2) Page 18 of Specification lines 23-25 to page 19 lines 1-3.

Specification

2. The disclosure is objected to because of the following informalities:

(1) Page 17 lines 14 where cited "apparatus bay way of a network" replace with --apparatus by way of a network--.

(2) Page 19 lines 16 where cited "region, pi represents the pixel value" replace with --region, "P" sub "i" represent the pixel value--.

(3) Page 20 line 16 where cited "represented by the diameter (2r) of a circle" replace with --represented by the diameter (calculated by $2*r$, where "r" stands for radius) of a circle--.

(4) Page 32 line 17 where cited "substituting pi in formula" replace with --substituting "p" sub "i" in the formula--.

(5) Page 32 line 22 where cited "with the brightness, pi represents" replace with – with the brightness, "p" sub "i" represent--.

Claim Objections

3. Claims 2-11 are objected to because of the following informalities:

(1) Page 35, claim 2 line 1 where cited "whether a primary-label" replace with – whether the primary-label--.

Claim Rejections – 35 USC 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being unpatentable over Tomoko Matsubara (Development of high-speed processing algorithm for mass detection based on thresholding technique in mammograms. Medical Imaging Technology Volz 15 No. 1 January 1997 Research Paper , pages 1-13. IDS.)

Tomoko Matsubara disclose the following method:

(1) Regarding claim 1:

a binary image generating means which carries out binary-coding processing on the radiation image data by the use of each of the threshold values set by the threshold value control means, thereby generating a plurality of binary images (page 4 lines 5-17,

page 7 paragraph "Segmentation of Inside of Breast Region" to page 8 lines 1-20.

Image reconstruction is base on high or low density of pixel values that is determine by the threshold value.)

a primary-label region extracting means which attaches a primary label to an isolated region in each of the binary images and extracts the isolated regions attached with the primary label as primary-label regions (page 5 paragraph "2)Automatic Extraction of Breast Region", page 5 paragraph "1) Classification of Images" to page 6-7. Classification is seen as primary -label region.)

a growth score calculating means which calculates for each primary-label region a growth score for evaluating the likelihood that the primary-label region represents a growth (page 8 paragraph "3) Detection of Mass Candidates" to page 9 line 1-6. Analyzing the boundary of the region of interest to determine if mass of interest is growth or benignant.), and

a prospective abnormal shadow region detecting means which compares the growth scores for the respective primary-label regions with each other and detects as the prospective abnormal shadow region a predetermined number of primary-label regions which are higher in the growth score than any of the others (page 12 paragraph "4) Elimination of False-Positive Candidates" to page 13 lines 1-22, page 12 lines 24-25. Creation of the standard deviation is the result of all the primary-label regions. Thus, the standard deviation is the rule that is compare with each other.).

(2) Regarding claim 2:

a secondary-label region determining means which determines whether a primary-label region extracted from one of the binary images is the same as that extracted from any other binary images, extracts as a secondary-label region only one of the same primary-label regions when it is determined that the primary-label regions extracted from the respective binary images are the same, and determines a growth score for the secondary-label region on the basis of the growth scores for the same primary-label regions wherein the prospective abnormal shadow region detecting means compares the growth scores for the respective secondary-label regions with each other and detects as the prospective abnormal shadow region a predetermined number of secondary-label regions which are higher in the growth score than any of the others (page 13 paragraph "(3) Reanalysis" to page 15. The paragraph show that reanalysis, which is seen as secondary-label region, functions as re-examination of the primary-labels.).

(3) Regarding claims 3 and 12:

which the threshold value control means stepwise sets a plurality of threshold values in the range covering all the pixel values which theoretically the pixel can take (page 6 lines 10-25).

(4) Regarding claims 4 and 13:

which one step at which the threshold value control means stepwise sets a plurality of threshold values is fixed to a predetermined pixel value (page 9 lines 20-25, page 10 lines 2-6, page 10 lines 20-25. Threshold pixel values, likes T5 and T6, are already predetermined from percentages of the pixels.).

(5) Regarding claims 6 and 15:

which the threshold value control means stepwise sets a plurality of threshold values in the range between a minimum pixel value which is minimum in the values of the pixels actually existing in the region of the object and a maximum pixel value which is maximum in the values of the pixels actually existing in the region of the object (page 6 lines 10-25. The regions are the blocks that has already be determine as interest. The pixels values inside the blocks are determined and to be compare.).

(6) Regarding claims 7 and 16:

which one step at which the threshold value control means stepwise sets a plurality of threshold values is fixed to a predetermined pixel value (page 9 lines 20-25, page 10 lines 2-6, page 10 lines 20-25. Threshold pixel values, likes T5 and T6, are already predetermined from percentages of the pixels.).

(7) Regarding claims 9 and 18:

which one step at which the threshold value control means stepwise sets a plurality of threshold values is changed according to the pixel value range (page 9 lines 20-25, page 10 lines 2-6, page 10 lines 20-25. Threshold pixel values, likes T5 and T6, are already predetermined from percentages of the pixels. The values can also change due because of the dependency of the percentages to be calculated.).

(8) Regarding claims 10 and 19:

which the one step is changed according to the class into which the pixel is classified in a histogram which shows the pixel value distribution in the radiation image data (page 6 lines 10-14).

(9) Regarding claims 11 and 20:

which the growth score is calculated on the basis of at least one of the brightness, the circularity, and the size of the primary-label region (page 24 lines 5-15).

(10) Regarding claims 5, 8, 14 and 17:

which said predetermined pixel value is equal to the minimum unit of the pixel value (page 10 lines 20-25).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Saotome et al (US PG PUB 20020051515) disclose method of and system for detecting prospective abnormal shadow.

Tsujii et al (US PG PUB 20030007674) disclose image processing apparatus and method.

Goto (US PG PUB 20030179915) disclose image diagnosis supporting device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsung-Yin Tsai whose telephone number is (571) 270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2609

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tsung-Yin Tsai
February 27, 2007



SHUWANG LIU
SUPERVISORY PATENT EXAMINER